CLAIMS

1. A gear assembly for transmitting torque from one shaft to another, the gear assembly comprising two intermeshing gears mounted on respective shafts, one of the gears comprising a hub member for receiving one of the shafts, a toothed annular member mounted for rotation with the hub member, and means provided between the hub member and the annular member having a stiffness capable of reducing torsional vibrations and noise induced during rotation of the gears by the eccentricity of at least one of the gears.

2. A gear assembly according to Claim 1, wherein the means for reducing torsional vibrations and noise comprises means for increasing the critical eccentricity of the gear.

3. A gear assembly according to any preceding claim, wherein the means for reducing torsional vibrations and noise comprises a resilient coupling between the hub member and the annular member.

4. A gear assembly according to any preceding claim, wherein the means for reducing torsional vibrations and noise is located between a radial surface of the hub member and an opposing radial surface of the annular member.

5. A gear assembly according to any preceding claim, wherein the means for reducing torsional vibrations and noise is located within a drive mechanism for transferring torque between the hub member and the annular member.

6. A gear assembly according to Claim 5, wherein one of the hub member and the annular member comprises a recess for receiving a

detent of the other of the hub member and the annular member for transferring torque between the hub member and the annular member, the means for reducing torsional vibrations and noise being located between opposing surfaces of the recess and the detent.

7. A gear assembly according to Claim 6, wherein said one of the hub member and the annular member comprises a plurality of said recesses each for receiving a respective detent of the other of the hub member and the annular member, the means for reducing torsional vibrations and noise being located between opposing surfaces of each recess and detent.

8. A gear assembly according to any preceding claim, wherein the means for inhibiting torsional vibrations and noise comprises at least one resilient member located between opposing surfaces of the hub member and the annular member.

9. A gear assembly according to Claim 8, wherein the means for inhibiting torsional vibrations and noise comprises a plurality of resilient members each located between respective opposing surfaces of the hub member and the annular member.

10. A gear assembly according to Claim 9, wherein each resilient member comprises a spring for providing torsional resistance.

11. A gear assembly according to Claim 9, wherein each resilient member comprises a plurality of springs for providing torsional resistance.

12. A gear assembly according to Claim 9, wherein each resilient member comprises a viscoelastic member.

13. A gear assembly according to any of Claims 1 to 7, wherein the means for reducing torsional vibrations and noise comprises mutually repelling magnets provided on opposing surfaces of the hub member and the annular member.

14. A gear assembly according to any preceding claim, wherein the means for reducing torsional vibrations and noise is arranged to maintain the phase relationship between the shafts.

15. A gear assembly according to Claim 14, wherein the means for reducing torsional vibrations and noise is arranged to permit a solid drive to be established between the hub member and the annular member above a predetermined drive torque.

16. A vacuum pump comprising at least two shafts connected together by a gear assembly according to any preceding claim.

17. A gear for transmitting torque from one shaft to another, the gear comprising a hub member for receiving one of the shafts, a toothed annular member mounted for rotation with the hub member, and means provided between the hub member and the annular member having a stiffness capable of reducing torsional vibrations and noise induced during use by eccentricity of the annular member.

18. Use of at least one spring in a gear of a gear assembly to reduce torsional vibrations and noise induced during rotation of the gears by eccentricity of at least one of the gears.